



Remarkable Professionals Ensure Command and Control of Electromagnetic Spectrum

By Thomas Kidd - [January-March 2013](#)

The department of the Navy's highly skilled electromagnetic spectrum professionals are more vital to the mission today than ever before. Without access to the electromagnetic (EM) spectrum, much of the technology that is so integral to our daily lives and military operations could not function, and never before have both peacetime and battlefield access to electromagnetic spectrum been more contested.

High-bandwidth wireless networks in homes, businesses and public spaces and satellite Internet access for ships at sea and troops on the ground have made spectrum an integral part of computer networks. We use remote EM transmitters to control televisions and unlock cars, and cell phones (EM transceivers) to talk, email and text. We rely on radio (EM receiver) and TV for news and entertainment. As inescapable as the EM spectrum is in our personal lives, however, it is essential to military operations. Unprecedented advancements in wireless technology have resulted in critical shortages of this unseen and finite resource. Without the DON's EM workforce's dedication to ensure spectrum access, the department would be unable to maintain, train and equip combat-ready naval forces capable of winning wars, deterring aggression and maintaining freedom of the seas.

Electromagnetic spectrum, the radio frequency (RF) a system operates on, is a common wireless enabler for many, if not most, new communicationselectronics systems. Whether acquired as commercial off-the-shelf products or developed specifically to support naval operations, virtually all spectrumdependent systems require some action by spectrum professionals before they can be brought into operation.

New spectrum-dependent systems must comply with national and international regulations meant to protect existing users and ensure equitable spectrum access. Ensuring a new system will not interfere with current users is essential to prevent interruptions, degradation or limitations to the effective performance of a system.

Because spectrum is a finite resource, sometimes a frequency band is not available for an emerging technology. To accommodate the entrant, a process called "reallocation" is employed. Spectrum reallocation can be arduous, requiring years of careful national or international negotiations. Spectrum professionals must be vigilant to ensure that agreements reached in negotiations do not negatively affect DON operations. So, in addition to being exceptional technical experts, DON spectrum professionals are skilled negotiators.

One of the spectrum workforce's most fundamental duties is continuous review and evaluation of the DON's radio frequency use to ensure naval forces' ability to operate effectively with minimal impact to the electromagnetic environment. New commercial and consumer uses of spectrum are introduced almost daily, increasing global demand. The resulting changes to national regulations and international treaties demand constant reevaluation and reassessment. The management of increasingly complex systems and their access to the finite EM spectrum in a chaotic environment is just business as usual for the DON's incomparable spectrum management professionals.

The entire DON electromagnetic spectrum workforce of military, civilian and contractor personnel totals fewer than 500 individuals. However, when combined with professionals from the other military departments, federal agencies, the Federal Communications Commission, as well as commercial and private spectrum users, a large workforce of dedicated professionals ensures that the United States EM environment supports cutting-edge wireless technology. Through close coordination and skillful negotiations, these professional spectrum managers are able to ensure consumer wireless technology is able to operate in the same environment along with high-powered commercial and military systems.

Most spectrum managers learn their skills through specialized technical schools while others got their start in the military. A spectrum manager must develop a mastery of general communications policy, as well as the technology and approved architecture, in order to function as a technical authority. Spectrum managers' technical mastery must extend beyond the ability to recommend certain frequencies or frequency bands.



Sgt. David Evans of Hedley, Texas monitors the data traffic and servers that support high-tech satellite communications in the Combat Operations Center. Photo by Master Sgt. Peter Walz

Related CHIPS Articles

[Deputy Secretary Discusses Future of Space Force at Space and Missile Systems Center](#)

[ICYMI: Artificial intelligence likely to help shape future battlefield, says Army vice chief](#)

[Junior Navy Technologists Create Autonomous Swarm Capability for Warfighters](#)

[Navy awards Boeing \\$805.3 million contract to design, build MQ-25A Stingray](#)

[Royal Australian Navy Delegation Visits NSWC Dahlgren Division in the Wake of RIMPAC 2018](#)

Related DON CIO News

[DON CIO Remains Focused on DON IM/IT policy and Governance Oversight](#)

[DON IT Conference Presentations Available](#)

[SECNAV Instruction 2400.2A Provides Updated DON Policy on Electromagnetic Environment Policy and Management](#)

[DON IT Conferences Share Information / Recognize DON IT Award Winners](#)

[DON CIO Publishes Cyber Glossary](#)

Related DON CIO Policy

[Electromagnetic Environmental Effects and Space Weather Event Preparedness Policy and Management](#)

[Radio Receiver Frequency Assignments for Mission-Critical Systems](#)

[DON Electromagnetic Spectrum Harmful Interference Reporting](#)

[Spectrum Supportability Risk Assessment Process Using the Spectrum Supportability Integrated Process Portal](#)

[Standardized Process for Commercial](#)

The scope of training includes: regulation of spectrum management; principles of spectrum management administration; mathematics of spectrum management; communication-electronics principles; spectrum planning for line-of-sight, troposcatter and satellite communications systems; navigational aids, radar and non-communications systems; electromagnetic environmental effects; spectrum management in a joint environment and training in service-automated tools.

The DON has long supported professional development. DON spectrum management professionals give back to their community as instructors for the Electromagnetic Spectrum Management Course on Keesler Air Force Base in Biloxi, Miss. Such schools produce a workforce capable of ensuring that the DON's latest acquisitions are employed to their maximum effectiveness with the least possible impact to the electromagnetic spectrum. Continuous curriculum revision at these schools ensures that new spectrum managers graduate with the knowledge and skills necessary to make immediate mission support contributions to the DON. Ongoing professional development helps the electromagnetic spectrum workforce keep pace with the frenetic pace of innovations in spectrum dependent technology.

Thomas Kidd is the lead for strategic spectrum policy for the Department of the Navy.

TAGS: [Cybersecurity](#), [Governance](#), [Spectrum](#), [Telecommunications](#), [Wireless](#)

CHIPS is an official U.S. Navy website sponsored by the Department of the Navy (DON) Chief Information Officer, the Department of Defense Enterprise Software Initiative (ESI) and the DON's ESI Software Product Manager Team at Space and Naval Warfare Systems Center Pacific.

Online ISSN 2154-1779; Print ISSN 1047-9988
[Hyperlink Disclaimer](#)